METHOD AND APPARATUS FOR OPERATING A NEURAL NETWORK WITH MISSING AND/OR INCOMPLETE DATA

ABSTRACT OF THE DISCLOSURE

[0043] A neural network system is provided that models the system in a system model (12) with the output thereof providing a predicted output. This predicted output is modified or controlled by an output control (14). Input data is processed in a data preprocess step (10) to reconcile the data for input to the system model (12). Additionally, the error resulted from the reconciliation is input to an uncertainty model to predict the uncertainty in the predicted output. This is input to a decision processor (20) which is utilized to control the output control (14). The output control (14) is controlled to either vary the predicted output or to inhibit the predicted output whenever the output of the uncertainty model (18) exceeds a predetermined decision threshold, input by a decision threshold block (22). Additionally, a validity model (16) is also provided which represents the reliability or validity of the output as a function of the number of data points in a given data region during training of the system model (12). This predicts the confidence in the predicted output which is also input to the decision processor (20). The decision processor (20) therefore bases its decision on the predicted confidence and the predicted uncertainty. Additionally, the uncertainty output by the data preprocess block (10) can be utilized to train the system model (12).